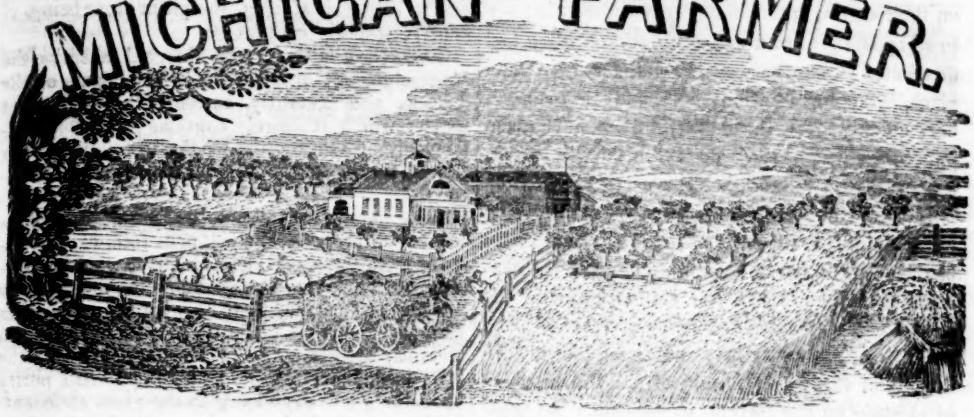
MICHIGAN FARMER.



DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC ECONOMY.

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H. HURLBUT, EDITOR.

[For Terms see last page.]

The Potato Rot--Supposed Preventive and Cure.

Accounts reach us from various parts of the State, of the prevalence to a greater or less extent, of rot in the potato. It appears to be confined, for the most part, to particular neighborhoods, of limited extent, while in the greater portion of the state, it is as yet unknown. Its development is generally at a late stage of growth, or rather after the growth is completed, and the potato sufficiently matured. Hence it is possible that the disease might in many cases have been altogether prevented by early digging, and storing in a dry, cool place.

A correspondent from Little Prairie Ronde, Cass Co., writes as follows:

"I am informed that the potato rot has commenced its ravages again in this section. A neighbor informed me to-day that he lost two-thirds of his crop within a very few days from the time he first discovered them to be diseased. Last year I planted on new ground, and lost about one-third of my crop. I planted the same piece of ground again this year with seed selected from last years' crop, and in digging I found but one unsound potato. Has the cause of the disease been satisfactorily accounted for, and if it has, is there any chance of finding a preventive, either by observing the condition of the ground, whether old or new, the quality of the soil, or by any other means?"

In answer to these inquiries we have to say, that as regards the cause of the disease, opintons have ever been, and still are so various, and that too in highly respectable quarters, that it would be presumption to pronounce that any one of the assigned causes is the true one. Investigations made by Mr. Teschemacher, of Boston, and by various learned men of Europe, resulted in discovering, by the aid of good glasses, minute vegetables, fungi, growing on the stalk, leaf and tuber of the diseased plant. They even went so far as to determine the botanical genus to which the fungus belongs. We know of no reason to doubt the correctness of these observations, and if correct, it is safe to infer that these fungi are at least the development if not the cause of disease. By some, they are regarded but as an effect of the diseased vital action of the plant, induced by some mysterious atmospheric or telluric influence, whose secret source, like that of the Asiatic cholera, and other epidemics, man is not permitted to fathom. The insect theory we had supposed well nigh exploded and obsolete—but we see it recently revived by that highly respectable English Journal, the Gardener's Chronicle, which pronounces very decidedly that the real cause of the disease is a very small insect of a light yellow straw color with a small pointed head with horns, and six legs. "These insects," it says, "are remarkably active in their movements, puncturing the ribs and other parts of the under sides of the foliage of the potatoes, where they may be easily discovered with a good glass; and if the stalks and green leaves are placed in a good position in respect to the reflection of a good clear light, &c., both the insect, their wood and bunches of eggs, may be readily discovered

on their stems, stalks, foliage, or tubers, that are to all appearance to a casual ob-erver healthy and unaffected; gangrene, putridity and mildew take place, according to atmospheric and other causes, very quickly after those destructives have made punctures, which they do astonishingly quick, proceeding on to more healthy parts."

If to the above opinions be added, that of the cause lying in sudden and extreme atmospheric changes, or in the unfavorable character of seasons, in the planting of too old varieties, in the excess of oxygen and deficiency of carbon in the plant, &c., some idea may be formed of the contrariety of views on this subject, and the difficulty of settling on the correct conclusion. At present, however, we believe the most approved opinion, is that the disease is an epidemic whose immediate cause is unknown—that fungi are produced as the result of diseased action—and that the insects sometimes discovered on the plants, (which are found to be altogether different in size and appearance in different places,) *come* to feed upon the fungi, and other products of the depraved juices, as they are always found to do upon any decaying vegetable or animal substance. This opinion, it will be seen, is too indefinite to point with any precision to a remedy; and for this, therefore, we must be dependent mainly on experiment.

Experiment has shown the following, among other facts.

1st. That stable and other fermentative manures applied to the patotoe crop, are injurious.

2d. That lime, ashes, salt, soot, and charcoal are all, to a greater or less extent, both preventives and cures.

3d. That early planting is advisable.

4th. That some varieties are less subject to become affected than others—but that the difference is not attributable in any marked degree, to the age of the variety.

With regard to the effects of charcoal as a remedy, the results of some recent experiments appear to show that this is a perfect specific. A correspondent of an English paper, the Mark Lane Express, who professes to write from long experience and practice as regards the potato, both in its production, storage, &c., speaks in these decided terms on this subject:

"I should be culpable, indeed, if I withheld one moment the two following facts, for they deeply concern some millions of the poor; and without hesitation, I challenge proof to reverse what I state.

The diseased potato may be almost entirely preserved from the effect of decomposition, by using pulverized wood charcoal; abundantly interposing it between the layers and in the interstices, in piting or storing, the pit or store being, of course, properly ventilated.

The action is thus: the charcoal absorbs the super-abundant moisture, the attendant of the disease, and instantly corrects the putrescent matter which it largely contains; therefore, effectually protecting the whole from infection or or contagion, or the evil action of heated moisture.

As a manure for the potato the action of charcoal when properly applied, is as follows:—It absorbs from the seed, (which, under existing circumstances, must be more or less diseased, no matter how attended to, or where procured in Europe,) that over moisture already named; and instantly correcting all putrescence, it leaves the soil around uncontaminated to act with purity upon the growth, yielding to the plant abundantly that of which disease has robbed it—carbon, and thus supplying a nutriment which constitutional weakness, (its real malady) essentially requires.

These are the main causes and effects of charcoal upon this disease: and knowing them to be incontestible, I should feel unjustified in longer withholding their publicity, the more particularly as Professor Liebig has now, it appears, stamped the facts with his high authority."

An Eastern paper brings the following confirmation of the above views:

"Mr. N. Green, of Torsetburg, Sullivan Co., N. Y., planted, last spring, three rows of potatoes side by side. To one row he applied, at planting, charcoal; to another, ashes: and to the third, lime. When the potatoes were dug, *there was not a rotten potato in the hills in which charcoal had been put; while all the others were more or less rotten.*

Mr. C. Gordon, of the same town, burned a log heap on the ground he intended for potatoes. A large quantity of coals was left. Where these were, *there was not a rotten potato;* where there was no charcoal, *the rot made its appearance.*

Mr. John M. Town[illegible] o[illegible]ello, last year applied charcoal *and his potatoes were all sound,* and of a superior quality. This year he put it in but a few hills, *which were not affected, while there was hardly a sound potato in the others.*

Mr. Harvey Hamilton, of this town, has kept potatoes a whole year with charcoal. *They did not sprout or wilt.*

Half rotten potatoes have been put in powderd charcoal. In two weeks the rotten part was found black and dry.

These facts are int[illegible]sting, [illegible]d may lead to important results."

ITALIAN RYE GRASS.—Mr. N. G. Lynch, of Concord, has brought us a small quantity of the seed of this grass, raised by himself. He has found it to flourish well on a dry upland soil, (oak-openings,) and thinks it especially valuable from its property of withstanding drouth. During the past summer, it grew with almost undiminished vigor, while herds' grass and clov[illegible] were

suffering from lack of moisture and excessive heat. From his acquaintance with the character of the grass in England, and from the success which appears to attend its culture here, he is of opinion that it will prove an advantageous substistute for herds' grass on the dryer kinds of our soils.

It is yet to be seen whether it withstands our winters well. In England and in Europe generally the Rye grass is highly approved. "After all the experiments that have been made upon other grasses," says Loudon, "none have been found to equal the perennial rye-grass for a course of mowing and pasturing for two, three, or seven years. It is sown in Italy, and especially in Lombardy, and also in France and Germany, along with the clover, for the same purposes as in England. When intended as a pasture grass, if stocked hard, and when for hay, if mown early, the objections to it are removed." Von Thaer says, "Of all cultivated grasses this is the most celebrated, and the one which has most steadily maintained its reputation. Two essential qualities are united in it: first, it may be mown; and secondly, when fed off it forms a close sward, which grown again with great vigor. It gives but one crop per annum for mowing; but the fodder which it yields is very substantial when it is cut before flowering: after that, its stems become hard."

The Italians think that rye grass, when sown with clover, affords, among other advantages, that of preventing distention of the stomach in cattle —a thing which is well known to be liable to happen, when they are fed with clover only.

Rye-grass has been put to the test of experiment in the Eastern States, where it has failed to meet with general approval. Judge Buel states that he twice tried the Italian variety, and the result induced him to abandon it as unsuited to the climate. The winters were too cold for it.

We expect to be able to inform our readers, next spring, whether the same difficulty is experienced here.

There is another kind of grass, the *Dactylis glomerata*, or Orchard grass, also called American Cock's foot, which is highly commended both in Europe and this country, and it may, perhaps, be found preferable to the last named, as it has the merit of being perfectly hardy. "This," says Buel, "is one of the most abiding grasses we have. It may be known by its coarse appearance, both of the leaf and seed-spike, its broad leaves, seed-glumes, resembling a cock's-foot, and also by its whitish-green hue. It is probably better adapted than any other grass to sow with clover and other seeds for permanent pasture, and for a crop of hay, as it is fit to cut with clover, and grows remarkably quick after being cropped by cattle. Five or six days' growth in summer suffices to give a good bite. Its good properties consist in its early and rapid growth, and in its resistance of drouth; but all agree, that to obtain its greatest value, it should be kept closely cropped. Sheep, it is said, will pass over every other grass to feed upon it. If suffered to grow long without being cropped, it becomes coarse and harsh. Arthur Young and Mr. Cook commend it highly, and the latter cultivates it on an extensive scale at Holkham. Colonel Powell, of Pennsylvania, after growing it ten years, declares, that it produces more pasturage than any cultivated grass that he has ever seen in America. On being fed very close, it has been found to afford good pasture after remaining five days at rest.— It is suitable to all arable soils. It abounds in seed, which is easily gathered; but, on account of its peculiar lightness, (the bushel not weighing more than twelve or fourteen pounds,) it should be spread on a floor and sprinkled with water a day or two before it is sown, that it may become saturated, and more easily germinate.— Two bushels of seed are sown to the acre, when sown alone; and half this quantity when sown with clover. The orchard-grass should be cut early when intended for hay, as it diminishes two seventh in value, as hay, by being permitted to ripen its seeds. When cut early with clover, the after-growth, or rowen, is very abundant."

Prize Essay,

On the connection of Science with Agriculture, by J. J. Thomas, of Macedon, N. Y.

[This essay, which received the premium of the N. Y. State Agricultural Society last January, is one of the most lucid and practical expositions of the subject it professes to discuss, which has ever appeared. It aims to point out some of the benefits which Agriculture has received from the related sciences, to indicate in what direction useful researches are hereafter to be expected, and to discriminate carefully between the real and the visionary—the practicable and the impracticable. There is nothing in it, which any man, however devoted to practice, as distinguished from theory, need except to, and we hope no one will be deterred by its length or by the forbidding word "science," from giving it a careful perusal.]

The past fifty years have been remarkably distinguished by numerous and extraordinary improvements in the useful arts. A great portion of these have resulted from the direct application

of scientific principles. The wonderful advancement in nearly all branches of manufacture, which so eminently distinguishes the present century from the past, is largely indebted to science. It was a thorough knowledge of chemistry and mechanical philosophy, that enabled James Watt to place the steam engine at once before the public as a powerful and efficient machine—a machine which has within the memory of middle-aged men, almost changed the face of civilized countries; and has spread towns, villages, and cultivated fields, in regions where, but for this invention, nothing would be seen but unbroken forests.

Very great advantages have resulted from the precision with which the principles of mathematics and mechanical philosophy, may be applied in arriving at practical results. The accurate knowledge of pressure and force, in constructing machinery, and in civil engineering, which calculation enables us to obtain, before trial, is of the greatest importance. The mathematician, who knows the force of gravity, may sit in his closet and tell us, without error, the velocity of a falling body, and the precise increase in its rate of descent; or he may determine, by calculation, from a knowledge of this velocity, the exact length of a pendulum to beat seconds. The engineer may ascertain, before he erects his work, the best form of an arch, to afford the greatest strength against the pressure of a superincumbent weight; or he may calculate accurately, the angle at which the lock gates of a canal should meet, to give the greatest security against the pressure of the head of water upon them, before a single trial has ever been made.

Interesting and important practical results are also obtained in the manufacture of various articles of commerce, by the application of the principles of chemistry. Geology has rendered great aid in the art of mining, in all its departments.—Not only in explorations for the more valuable metals, but for the coarser, but not less important articles, salt and coal, tens of thousands might often have been saved, by a knowledge of the relations and character of the rocky strata at at the surface of the earth.

The precision with which the principles of natural philosophy have been variously applied in machinery and engineering,—and chemistry and geology in manufactures and mining,—has led to the apparently plausible conclusion, that not less important results might be at once obtained by the application of science to agriculture. From the rapid advancement of science within the present age, the opinion seems to be gaining ground, that some great and extraordinary results are about to take place; that the slow progress in agriculture which practice and experience have effected, will soon commence taking more rapid and powerful strides; that we are about te remove the veil of obscurity and uncertainty, which hangs over so many operations in culture, understand every process, and so completely control the growth of plants, as almost to set man free from the labor of tilling the earth by the sweat of his brow; or in other words, that the agricultural millenium is near at hand. But a more thorough examination, will clearly show that we have no reasons for drawing such a conclusion; that the other sciences, have as yet, accomplished directly, but little for agriculture; and that years of slow and patient experiment must yet determine many points, which are already by many persons taken for granted. The same precision with which conclusions have been arrived at in other arts, is entirely out of the question here. A great deal of uncertainty must, for a long time yet to come, attend the application of other sciences to the art of cultivation. The investigation of questions strictly chemical, is far easier than to determine the intricate and combined relations existing between chemistry and vegetable physiology. In the first place, the analysis of soils is one of the most difficult of all kinds of earthy analysis. In the next, vegetable chemistry is involved in a great deal more uncertainty than other departments of the science. Thirdly, the changes which are constantly taking place in the growth of plants, variously influenced as they are by the atmosphere, by drought or moisture, by the nature of the soil and the many different materials of which it consists, some fitted for assimilation, and others not,—are from these causes, and the time required to effect them, and the minute quantities of matter controlling them, often entirely beyond the closest observations, and can be determined but very imperfectly by an examination of the final results.

Now, the object of these remarks, is not to denounce nor discourage the application of science to agriculture; but, directly the reverse, to prevent a total rejection from the disappointment and disgust, which must follow the practice of holding up false hopes. If an enterprise is attended with peculiar difficulties, that enterprise is not forwarded by representing it as easy of accomplishment, by concealing its difficulties and overstating its advantages. Those who are falsely allured at the outset, will, from the disappointment resulting, be led to refuse even the benefits which might be secured. Hence, one of the greatest injuries to science, is to invest it with false colors. On the other hand the highest benefit is to strip it of its artificial dress, and exhibit its true character, that proper caution may be used, and success instead of chagrin be the consequence.

A brief glance at the different ways in which science is expected to benefit agriculture, may serve to show in what direction the greatest assistance will be afforded.

In the first place, a more certain result is to be looked for in no quarter, than in the application of the principles of mechanical philosophy to the construction of farm implements and machines. A great and decided benefit has already followed from this cause; and no doubt machines might be much improved, simplified, and rendered lighter, and at the same time stronger, by a strict observance of the nature of forces, of the mechanical powers and elements of machinery, to determine precisely where strength is indispensable, and where also it is not needed; and in changing and adapting the moving power in the best possible manner to effect the intended purpose. It is highly essential, that every thing of the kind in constant employ, and requiring for its use, perhaps thousands of repeated motions of the hand in a single day, should not be encumbered with a needless pound in weight. The laborer who uses

the hand-hoe, usually makes with it no less than two thousand strokes in an hour, or twenty thousand in a day of ten hours. If in any part, where strength is not needed, it is made unnecessarily heavy, even to the amount of half a pound, then the aggregate force uselessly expended, would amount to no less than ten thousand pounds, or five tons, in a single day. In larger machines, worked by horses, including wagons and carts, as well as threshing machines, and even plows and harrows, there is no doubt in nearly all cases a waste of power. A strict regard to mechanical principles, and their mathematical application, throughout the numerous implements, tools and machines, constantly in use by every farmer, would be of the highest benefit. An entire volume might be written on this subject alone. It is true that the manufacturer of these, is the person directly concerned; but farmers too are deeply interested in the improvement.

Those sciences, however, which are regarded as more particularly and directly applicable to agriculture, are vegetable physiology, and chemistry, and geology. The intimate connection between vegetable physiology and vegetable chemistry, and between geology and the chemistry of the soils, render them all in a manner inseparable, and they will be mostly considered together.

The relations of vegetable physiology to the practice of horticulture, are vastly more important than to agriculture. The far greater number of species which come under the cognizance of the horticulturist, and the variety of treatment they need, render it very necessary that he should understand the nature of acclimation, the influence of heat, cold, moisture, and fertility, on the germination, and action of the roots, stems, leaves, and various other parts of plants. Such knowledge would be also highly advantageous to the enterprising agriculturist, whose object, aside fron the profit, is to introduce new vegetable productions for general culture, and who should therefore understand the effect of removal to an unlike climate and soil.

But this science often becomes very useful to the common farmer. A knowledge of physiology, and of the enormous quantity of moisture which plants perspire insensibly from the leaves, would have wholly prevented the very common and pernicious error, that weeds preserved moisture in the earth, and shade contiguous plants from the effect of drought, while in fact every weed is an outlet through which moisture as well as nourishment is rapidly drained from the soil.—An acquaintance with the principles of botany would have prevented the prevalence of the equally pernicious notion, that the weed so common in wheat, termed chess, could ever be transmuted to wheat, a plant not only of a different species, beyond the boundary of which, a plant by no change ever passes, but is also of a different genus. A knowledge of the fact, that no root of a plant can long remain alive, which in a growing state, is deprived of its breathing apparatus, the leaves, would have prevented the wil! attempt practiced some years ago, of endeavoring to destroy patches of canada thistles, by carefully digging up every fibre of the roots from a depth of several feet; while a simple, obvious, and efficacious remedy consisted in merely starving the roots, by cutting off unremittingly the supply from the leaves for a proper length of time.—Were the vital importance of the leaves to the health and perfection of the seeds of plants properly understood, the practice of "topping" corn would never have been resorted to. In numerous other cases, this science serves to throw light on operations of culture, and to assist correct practices.

An intimate and important connection exists between agriculture and chemistry combined with vegetable physiology. In some cases, considerable accuracy of reasoning, and certainty of application may exist; in others, all seems as yet involved in uncertainty. The triple relations of the analysis of plants, of soils, and of manures, and the determination of the constituents of each, promise, perhaps, more important results than any other department.

The knowledge of the organic constituents of plants, composed of various combinations of the four elements, carbon, hydrogen, oxygen, and nitrogen, may afford some very useful suggestions in practice. By knowing for instance, the proportions of these constituents, we can often arrive at a comparative value of different kinds of grain. Analysis shows that some vegetable products contain more starch than others; some abound in gluten; some contain a large portion of oily matter, and others are distinguished for other ingredients. Now, some of these are best adapted to one object, and others to another object. If for instance, in feeding animals, it is intended to fatten them, those grains would be pointed out as best, which most largely contain oil; if to make them grow in flesh and muscular parts, those which abound in gluten; if the object is to make a cow yield butter, food containing oily matter should be given: if to yield cheese, beans, peas, and clover should be given; and if milk in quantity merely, succulent food should be employed. But although in these instances, analyses may suggest useful practices, yet the *amount* of the benefit must be determined by practice. Theory may point out one course as better than another, but the difference may be so small, as not to merit attention in practice, which can only be determined by direct experiment.

The difficulty of arriving at a correct practical conclusion, in relation to the quantity of nutriment in grain and other food by analysis, will be evident from the fact, abundantly proved by some of the best farmers in New-England as well as in Western New-York, that corn ground and boiled with water, is more effective in fattening hogs, than twice the amount fed in the dry grain.

Analysis, in other cases, will show the comparative value of different varieties of the same grain. A very valuable ingredient in wheat is gluten; of this, French wheat has been found to contain 12 per cent.; Bavarian, 24 per cent. H. Davy obtained 19 per cent. from winter, and 24 from summer wheat; from Sicilin, 21, and from Barbary wheat, 19 per cent. But the uncertainty of permanent dependance on such analysis is proved by the fact that the nature of the soil may considerably influence the result. Hermbstædt found that the same wheat which, with vegetable manure only, gave scarcely 10 per cent. of gluten, yielded more than three times as much when ma-

nured with powerful animal substances, rich in ammonia. Some varieties of the potato are found to contain more starch than other varieties; and this quantity is also controlled to some extent by soil.

The analysis of plants will also indicate what plants are best to employ as manure by plowing in the green crop. A considerable portion of nitrogen is essential to the growth of wheat. Now clover is also found to contain a large portion: hence a crop of clover becomes eminently useful as manure for this grain. Wheat abstracts its nitrogen chiefly from the soil, and is consequently exhausting; clover obtains it mostly from the air, and is not exhausting, but becomes in this way the provider for the wants of the wheat.

(To be continued.)

Practical use of Leaves.

There are two facts in the functions of the leaf, which are worth consideration on account of their practical bearings. The food of plants is, for the most part, taken in solution, through its roots. Various minerals—silex, lime, alumin, magnesia, potassa—are passed into the tree in a dissolved state. The sap passes to the leaf, the superfluous water is given off, *but not the substances which it held in solution.* These, in part, are distributed through the plant, and, in part, remain as a *deposit in the cells of the leaf.* Gradually the leaf chokes up, its functions are impeded, and finally entirely stopped. When the leaf drops it contains a large per cent. of mineral matter. An autumnal or old leaf yields, upon analysis, a very much larger proportion of earthy matter than a vernal leaf, which, being yet young, has not received within its cells any considerable deposit. It will be found also, that the leaves contain a very much higher per cent. of mineral matter, than *the wood of the trunk.* The dried leaves of the Elm contain more than eleven per cent. of ashes, (earthy matter,) while the wood contains less than two per cent.; those of the willow, more than eight per cent.; while the wood has only 0.45; those of the Beech 6.69, the wood only 0.36; those of the European Oak 4.05, the wood only 0.21; those of the Pitch pine 3.15, the wood only 0.25 per cent.

It is very plain from these facts, that in forests, the mineral ingredients of the soil perform a sort of *circulation;* entering the root, they are deposited in the leaf; then, with it, fall to the earth, and by its decay, they are restored to the soil, again to travel their circuit. Forest soils, therefore, instead of being impoverished by the growth of trees, received back annually the greatest proportion of those mineral elements necessary to the tree, and besides, much organized matter received in the plant from the atmosphere; soils therefore are gaining instead of losing. If the owner of parks or groves, for neatness sake, or to obtain leaves for other purposes, gathers the annual harvest of leaves, he will, in time, take away great quantities of mineral matter, by which the soil, ultimately, will be impoverished, unless it is restored by manures.

Leaf-manure has always been held in high esteem by gardeners. But many regard it as a purely *vegetable substance;* whereas, it is the best mineral manure that can be applied to the soil.—What are called vegetable loams, (not peat soils, made up principally, of decomposed roots,) contain large quantities of earthy matter, being mineral vegetable, rather than vegetable soils.

Every gardener should know, that the best manure for any plant is the decomposed leaves and substance of its own species. This fact will suggest the proper course with reference to the leaves, tops, vines, haulm, and other vegetable refuse of the garden.

The other fact connected with the Leaf, is its function of *Exhalation.* The greatest proportion of crude sap which ascends the trunk, upon reaching the leaf, is given forth again to the atmosphere, by means of a particularly beautiful economy. The *quantity* of moisture produced by a plant is hardly dreamed of by those who have not specially informed themselves. The experiments of Hales have been often quoted. A sunflower, three and a half feet high, presenting a surface of 56.16 square inches exposed to the sun, was found to perspire at the rate of twenty to thirty ounces avoirdupois, every twelve hours, or seventeen times more than a man. A vine with twelve square feet exhaled at the rate of five or six ounces a day. A seedling apple-tree, with twelve square feet of foliage, lost nine ounces a day.

These are experiments upon very small plants. The vast amount of surface presented by a large tree must give off immense quantities of moisture.—*Farmer and Gardener.*

[The editor of the Indiana Farmer and Gardener is not only a popular clergyman, and skillful horticulturist, but an excellent judge of the qualities of butter also. We had no idea, before reading the subjoined article, that the making of bad butter was so complicated a science. There are some among us in the Peninsular State, that have studied the rudiments pretty well, but we fervently hope it is left to Hoosiers to become deeply versed in the mysteries. Read the following learned exposition of them, ye Michigan maids of the Cream-pot, and take warning.]

The Science of Bad Butter.

We took occasion, last year, to give our opinion of the butter which is so largely brought to this market. The article was deemed severe; but if they who think so had eaten of the butter, they would have regarded *that* as the more pungent of the two. We have waited another year; and are now prepared more fully to testify against that utter abombination, slanderously called, butter, so unrighteously exchanged in our market for good money. For the most part, the cream is totally depraved at the start, and churning, working, and packing are only the successive steps of an evil education by which bad inclinations are developed into overt wickedness. We determined to keep an eye upon the matter; and now give, from life, the natural history of the butter sold at Indianapolis.

Before doing this, we will express an opinion of what is *good butter.*

Good butter is made of sweet cream, with perfect neatness; is of a high color, perfectly sweet, free from buttermilk, and possesses a fine grass flavor.

Tolerable butter differs from this only in not having a *fine flavor*. It is devoid of all unpleasant taste, but has not a high relish.

Whatever is less than this is bad butter; the catalogue is long, and the descending scale is marked with more varieties than one may imagine.

Variety 1. *Butter-milk butter.*—This has not been well worked, and has the taste of fresh buttermilk. It is not *very* disagreeable to such as love fresh butter-milk; but as it is a flavor not expected in good butter, it is usually disagreeable.

Variety 2. *Strong butter.*—This is one step farther along, and the buttermilk is changing and beginning to assert its right to predominate over the butteraceous flavor; yet it may be eaten with some pleasure if done rapidly, accompanied with very good bread.

Variety 3. *Frowy or frowsy butter.*—This is a second degree of strength attained by the buttermilk. It has become pungent, and too disagreeable for any but absent-minded eaters.

Variety 4. *Rancid butter.*—This is the putrescent stage. No description will convey, to those who have not tasted it, an idea of its unearthly flavor; while those who *have*, will hardly thank us for stirring up such awful remembrances by any description.

Variety 5. *Bitter butter.*—Bitterness is, for the most part, incident to winter butter. When one has but little cream and is long in collecting enough for the churn, he will be very apt to have bitter butter.

Variety 6. *Musty butter.*—In summer, especially in damp, unventilated cellars, cream will gather mold. Whenever this appears, the pigs should be set to churn it. But instead, if but just touched, it is quickly churned; or, if much molded, it is slightly skimmed, as if the *flavor* of mold, which has struck through the whole mass, could be removed by taking off the colored portion. The peculiar taste arising from this affection of the milk, blessed be the man who needs to be told it!

Variety 7. *Sour-milk butter.*—This is made from milk which has been allowed to sour, the milk and cream being churned up together. The flavor is that of greasy sour milk.

Variety 8. *Vinegar-butter.*—There are some who imagine that all milk should be *soured* before it is fit to churn. When, in cool weather, it delays to change, they expedite the matter by some acid—usually vinegar. The butter strongly retains the flavor thereof.

Variety 9. *Cheesy-butter.*—Cream comes quicker by being heated. If sour cream be heated it is very apt to separate and deposite a *whey;* if this is strained into the churn with the cream, the butter will have a strong cheesy flavor.

Variety 10. *Granulated butter.*—When, in winter, sweet cream is over-heated, preparatory to churning, it produces butter full of grains, as if there were meal in it.

Variety 11. In this we will comprise the two opposite kinds—*too salt*, and *unsalted butter*. We have seen butter exposed for sale with such masses of salt in it that one is tempted to believe that it was put in as a make-weight. When the salt is coarse, the operation of eating this butter affords those who have good teeth, a pleasing variety of grinding.

Variety 12. *Lard-butter.*—When lard is cheap and abundant, and butter rather dear, it is tho't profitable to combine the two.

Variety 13. *Mixed-butter.*—When the shrewd house-wife has several separate churnings of butter on hand, some of which would hardly be able to go alone, she puts them together, and those who buy, find out that "Union is *strength!*"—Such butter is pleasantly marbled; dumps of white, of yellow, and of dingy butter melting into each other, until the whole is ring-streaked and speckled.

Variety 14. *Compound butter.*—By compound butter we mean that which has received contributions from things animate and inanimate; feathers, hairs, rags of cloth, threads, specks, chips, straws, seeds; in short, everything is at one time or another to be found in it, going to produce the three successive degrees of dirty, filthy, nasty.

Variety 15. *Tough-butter.*—When butter is worked too long after the expulsion of buttermilk, it assumes a gluey, putty-like consistence, and is tough when eaten. But oh! blessed fault! we would go ten miles to pay our admiring respects to that much-to-be-praised dairy-maid whose zeal leads her to work her butter too much! We doubt, however, if a pound of such butter was ever seen in this place.

Besides all these, whose history we have correctly traced, besides butter tasting of turpentine from being made in pine churns; butter bent on traveling, in hot weather; butter dotted, like cloves on a boiled ham, with flies, which Solomon assured us, causeth the ointment to stink; besides butter in rusty tin pans, and in dirty swaddling clothes; besides butter made of milk, drawn from a dirty cow, by a dirtier hand, into a yet dirtier pail, and churned in a churn the dirtiest of all; besides all these sub-varieties, there are several others with which we have formed an acquaintance, but found ourselves baffled at analysis. We could not even guess the cause of their peculiarities. Oh Dr. Leibig! how we have longed for your skill in analytic chemistry! What consternation would we speedily send among the slatternly butter-makers, revealing the mysteries of their dirty doings with more than mesmeric facility!

And n w, what on earth is the reason that good butter is so great a rarity? Is it a hereditary curse in some families? or is it a punishment sent upon us for our ill-deserts? A few good butter makers in every neighborhood are a standing proof that it is nothing but bad housewifery; mere, sheer carelessness which turns the luxury of the churn into an utterly nauseating abomination.

Select cows for quality and not for quantity of milk: give them sweet and sufficient pasturage; keep clean yourself; milk into a clean pail; strain into clean pans—(pans scalded, scoured, and sunned, and if tin, with every particle of milk rubbed out of the seams.) While it is yet sweet, churn it; if it delays to come, add a little salaratus; work it thoroughly, three times, salting it at the second working; put it into a cool place, and then,

when, with a conscience as clean and sweet as your butter, you have dispatched your tempting rolls to market, you may sit down and thank God that you are an honest woman!

MICHIGAN FARMER.

JACKSON, NOVEMBER, 1846.

"Gather up the Fragments."

By the time this number shall visit the firesides of most of our patrons, the excitement of the election contest will have passed by, and in the season of comparative leisure which is approaching, with its long evenings sacred to quiet and domestic peace, there will be time to do the world some service by recording for its benefit the lessons that experience has taught during the season that is past. Some have tried experiments—all have made observations. Let us hear something of the result. We have promises to this effect,—direct from a few, implied from many more:—for, that every one should contribute according to his ability to the common good, is certainly matter of fair implication.

Don't put off writing because you have nothing to communicate of *great* importance. A collection of items, each of minor value, might, in the aggregate, be of much utility. Atoms compose the mountain.

Don't refuse to write because you have not leisure or matter for a long essay. Six lines may do as well as six hundred. Cut the coat according to the cloth;—measure the length of your article by the nature of the subject, and the amount of time at your disposal.

Don't refuse because you may be unaccustomed to prepare matter for the press. If so, put it down in plain, straight-forward language, as one neighbor would tell it to another, and we will take care that all is right for the printers.

Again, don't neglect to write because what you have to say is not appropriate to the present season. If not applicable now, it will be next year. An agricultural paper is designed to serve as a storehouse of useful facts and right principles, for preservation and future reference.

Come then, farmers, put your shoulders to the wheel, give us your contributions, be they little or much, and see how useful a paper we can all make the "Michigan Farmer" by our joint efforts. We say again, write for your paper.

Acknowledgments.

SPECIMENS OF FRUIT.—A watermelon was brought to our office on the 7th of October, by Mr. Ingraham, of Napoleon, which weighed 32½ lbs. It was in a good state of preservation and of excellent flavor, having been preserved from its time of ripening, (about the 1st of August,) to the time of delivery, by being buried up in the soil, without separation from the vine.

A pippin sent by H. G. Sheldon, of Ypsilanti, weighed 16 oz., and measured 13½ inches in circumference. It was said to have lost considerably in weight and measurement after being picked.

A pound sweeting, raised in the garden of the Rev. Mr. Fitch, of this village, weighed 20¾ oz. and measured 14½ inches in circumference.

From Mr. D. Chapel, of Sandstone, we have an Alexander apple 14 inches in circumference, weighing 17 oz.

☞ From C. Wheelock, of Jackson, two beautiful Bell-flower apples, and a pumpkin 29 inches in length.

SQUASHES.—We are indebted to friend "Nehemiah," of Plymouth, for the present of two Bohemia squashes, raised by him in that town, weighing one 44, and the other 87 lbs. We are glad he has opened "a line of communication with us," but until we know his full name, it must be "all on one side."

LONG WOOL.—Mr. B. Page, of Ann Arbor, has furnished us a sample of wool 11 inches in length without stretching! It is from a buck of the celebrated New Oxfordshire sheep, belonging to Clayton Reybold, Esq., of Delaware.

COULD'NT SEND THEM.—We much wished to send out with the present number, something like a thousand receipts to our subscribers, for subscription dues;—but "owing to circumstances beyond our control," we fall far short of the mark. We beg our friends not to feel delicate about putting us to the trouble of making them out, for we have plenty of blanks, and it is but the labor of a moment—a pleasant kind of labor, too.

TRANSPLANTING FRUIT TREES.—If fruit trees have been taken up, which it is not convenient to set out this fall, they are said to be best preserved during the winter by burying them completely, in the ground, the tops a few inches, and the roots a foot or more.

SALT FOR PLUM TREES.—Downing's Horticulturist states that the copious application of salt to the roots of plum trees not only causes them to grow vigorously and produce large crops of superior fruit, but will also destroy the Curculio.

BONES DISSOLVED IN CAUSTIC LEY. — I have seen much in your paper of bones being dissolved in sulphuric acid as a manure. Are you aware that bones may be dissolved in the alkaline ley of the soap-boiler, and will form a paste of the consistence of butter, which may be reduced to any thinness of fluid required for application as a liquid manure?—*Gard. Chron.*

[Bones are composed chiefly of phosphate of lime, gelatine, and oily matters—all, rich fertilizers. More than one-half is phosphate of lime, and this substance constitutes about one-half the ashes of the grain of wheat. When bones are simply pulverized, or dissolved in sulphuric acid, the whole of their fertilizing matter is saved.—When burnt, they are more easily broken up: but both the gelatinous and oily matters are dissipated. If dissolved by boiling in strong lye, most of the gelatine passes off in the form of ammonia, but the oil combines with the lye, forming a thin soap.]

Hot-Beds.

After a little practice any one can make and manage a simple hot-bed. For a common family one 12 by 4 feet will be large enough, and 9 by 4 will answer for a small family. *Frame.* The frame should be made of two inch stuff, (pine or poplar.) The back must be as high again as the front, in order to give the right inclination to the sash. The ends should be nailed fast to corner posts, say four inches square. The back and front are to be attached to these parts by iron bolts, which may be screwed or unscrewed at pleasure. The frame may be taken to pieces, if so made, and put away during the season it is not in use. A frame 12 by 4, will take four sash of three feet wide, the other sized frame will take three sash. Where the sash meet, a piece of wood three inches broad and two thick, should be let in from back to front, for the sash to run upon, and it may be allowed to extend back for two feet beyond the body of the frame. Three coats of paint should be put on the outside and inside of the frame, and then, with good care, it will last twenty years.

Hot-bed. Mark out the ground six inches larger every way than your frame. Dig it out a foot deep. Take fresh, strong horse-dung. Shake it up and mix it thoroughly. Lay it into the bed evenly, beating it down with the back of the fork, *but never treading it.* Raise the bed three feet above the surface, making the thickness in all four feet. In a week's time this will have settled six or eight inches. We have for the sake of a gentler and longer continued heat, laid alternate layers of manure and *tan-bark*, and thus far it has done well with us. Put on the frame and sash and let stand till the heat begins to rise, which will be two or three days. Then raise the sash to let the steam pass off. In about four days take off the frame, put on about six inches of light, good soil, evenly, all over the bed: re-place the frame, and in a day thereafter it will be ready for seed.

Cabbage, cauliflowers, tomatoes, egg plants, peppers, celery, cucumbers, lettuce, together with savory herbs, as sweet majoram, sweet basil, thyme, sage, lavender, &c. &c., may be sown in drills in the soil prepared as above.

It is difficult to give, on paper, the directions for the care of the bed. The greatest dangers of all, are that of *burning* the plants by excessive heat, or of damping them off, by too little air.—These evils must be guarded against by the admission of as much air as possible. In mild days let the sash be partly open all day, and in very cold days, endeavor to procure a half hour even, at mid-day, for raising the sash and airing the plants. As they grow up, if crowded, they should be thined out, so as not to run up spindling.—*Farmer and Gardener.*

WOODLANDS.—Many farmers pursue a very erroneous policy in reference to their woodlands. Instead of cutting all clean as they go, it too commonly is the case that only the older and larger trees are selected, or those which are decayed, or dead.

This method is scarcely to be pursued without serious detriment to the growth, as in felling many small trees must inevitably be lacerated, or destroyed out-right. If the growth be thick, extensive openings will be made, and besides, roads must be cleared in order to get out the wood after it is cut.

The most economical plan is to cut all smooth as you proceed. The clearing thus effected, if it be intended for a future growth, should be immediately enclosed, and carefully protected from the intrusions of cattle, sheep and other animals, by which the young sprouts, which start with great vigor, and pursue their growth rapidly, would be broken and destroyed. In France this is the plan universally pursued, and, according to some authorities, the only one which the government, under whose special supervision all the forests of the kingdom are rigidly retained, allows.—*Maine Farmer.*

THE SUNFLOWER. — Some years since, we were induced by the favorable accounts published in the papers, to make trial of this plant, and found our experience to corroborate the representations we had perused. We found it not only a vegetable of remarkably easy cultivation, but highly valuable in all its parts. The seed, for fowls, is worth more than any other product, not even excepting corn: while in the stalks and foliage of the young plants, cattle, of all kinds, find a most desirable and nutritious food. We have made no experiments, as yet, calculated to test its productiveness as a field crop, yet we are sanguine that with the advantages of a good soil and proper attendance, it would be found very prolific: perhaps more so than any grain we have ever cultivated.—*Maine Farmer.*

MACHINE FOR FENCING AND DITCHING AT ONE OPERATION.—Mr. Wm. C. Bussey has invented a machine in which two ditching machines are arranged in such a manner that the sods cut from two parallel ditches shall be elevated and placed with the grass side out, in a continuous ridge between said ditches, at one operation. Entered at the Patent office, Sept. 3rd.—*Scientific American.*

KALAMAZOO CO. AGRICULTURAL SOCIETY.—The first fair of this Society took place according to appointment on the 8th ult. From the account that has reached us, we infer that it was entered into with much spirit. All or nearly all the premiums awarded found competitors, and the display of household manufactures, and specimens of fruit are said to have been highly creditable. As an evidence of the public spirit among the farmers of that county, it is stated that most of the successful competition for prizes, proposed to let the amounts of their premiums remain in the treasury of the Society, to be used for the purchase of animals for the improvement of stock.

We have been particularly struck with the description given of two gangs or sets of plows which were among the farming implements brought forward on the occasion.

"A gang of four Ploughs were exhibited, invented by Nathan Baker, of Flowerfield, St. Joseph Co., and attached to two small wheels of unequal size, one running in the furrow, the other upon the unploughed land, and so constructed as to require no one to hold them. Those shown by Mr. Baker, were intended for ploughing summer fallow the second time, or for ploughing in wheat. Mr. Baker has also had in successful operation a pair of Ploughs for ploughing stubble or green sward, attached to wheels, and do the work more perfectly than it is possible to do it by the ordinary way, and with much more ease to the teams. A boy, with four horses, will plough twice as much as two men with four horses. By a simple process the ploughs can be gaged to plough any depth required, and no variation in depth, there being no balks and no land covered that is not ploughed. These ploughs are worthy the attention of the Agricultural community.—Mr. Baker has spent many years in the study of Ploughs, to construct one that would scour upon the rich prairies of the west, and having succeeded in that, he is still pursuing the subject, and so arranging them as to lighten the draft and save help by attaching them in numbers to wheels, and his success is complete. By this invention, the farmer can have his land ploughed just as he wishes, and done by any boy that can drive a team; he has only to go to his field, gage his ploughs, and if he chooses, turn the key upon them and put it in his pocket, the ploughs must remain as he sets them, and can be altered only at his will, unless he chooses to trust the matter with his ploughman."—*Michigan Telegraph.*

For the Michigan Farmer.

Driving Bees.

MR. EDITOR,—

Dear Sir,—I noticed a communication in one of the numbers of your paper upon the treatment of bees, in reference to driving them out of one hive into another. I also noticed another communication from under the hand of our friend Dimond, who says he tried the experiment recommended by the Farmer, and succeeded in driving them out of one hive into another, and then they decamped to parts unknown. He says it was a young swarm. Now it cannot be supposed that the author intended to meddle with a young swarm; for if a young swarm succeeds in filling a common sized hive the first season, they do pretty well: for I believe that a young swarm commences breeding soon after making comb, and continue to hatch out young bees during the season, or until very late in the fall, and Mr. Dimond remarks that he found his hive full of comb and young bees. The object, as supposed, in driving bees, is to procure what honey they have made, without destroying the bees, leaving them time to make enough to winter on; and to keep the hive free from impure comb, as old comb frequently gets mouldy and bees do not of course do as well. I apprehend that if Mr. Dimond had tried the experiment with an old swarm, the result would have been otherwise. Not having seen any explanation of the circumstances referred to above, I thought I would briefly give my views on the subject and if you should think they might benefit any one, you are at liberty to publish them.

Respectfully yours,
M. W. NORTHEAST.

Jackson, Oct. 11, 1846.

Feeding Grass Lands.

Grass lands intended for mowing, are unquestionably greatly injured by close feeding. Particularly is this true of lands recently laid down, and in which, from the light and unconsolidated condition of the soil, the roots of the grasses have not obtained a permanent hold. Clover, on stubble lands, may be nearly spoiled by close feeding in a single season, and we have, indeed, known several instances, recently, in which this fact has been mournfully exemplified, notwithstanding the owners persisted in attributing the failure to other and less obvious causes.

A friend, who had taken much pains, and bestowed extra care in seeding a clover field, from which the well-known fertility and high tilth of the soil favored the expectation of an abundant crop, informed us recently that his hopes proved wholly illusive, as most of the roots "died out." He at first contemplated the evil as resulting from the depredations of worms, but on our suggesting that feeding had been instrumental in producing the result of which he complained, and explaining the reasons for our belief, he at once concurred.

We have noticed that clover usually does well, and is seldom "winter killed," unless it is fed late. Where the growth is luxuriant, the foliage operates, in winter, as a protection to the roots, which are tender and require some substance to ward off the chilling and torpifying effects produced by excessive cold. When fed, the foliage is not only lost to the roots, but the roots themselves are frequently lacerated and destroyed.—*Maine Farmer.*

FREMONT CORN.—There is a kind of Corn which grows spontaneously on or about the Rocky Mountains, which is similar to the common Indian corn, with the peculiarity of having each ker.

nel enveloped in a husk. Capt. Fremont brought home some of this corn, and a few kernels were planted near Jersey City, from which several ears have been produced, and are now on exhibition in the horticultural department of the Fair of the American Institute.—*Scientific American.*

To Color Cloth, etc., Madder-Red.

For ten pounds of flannel or yarn, take three-fourths of a pound of cream of tartar, and three-fourths of a pound of alum; pound them fine and boil fifteen minutes in a little rain-water. Then add a little cold water and put in your yarn or cloth, and boil it three hours, stirring it often.—Then take your cloth out and air it well. Throw away the above water.

Next take a sufficient quantity of rain-water, so as not to crowd your cloth; put into it three pounds of madder, and heat it over a moderate fire as hot as you can bear your hand in it. Then put in your cloth and keep it stirring three hours at the same heat. Then take out your cloth, and add to this water two quarts of soft soap, and stir it up well, put in your cloth for twenty minutes, and then it is ready for scouring. The cloth or yarn should be well washed before being put into the first described water, and put into it while wet.

The cost of this coloring will be about six cents a yard for cloth or flannel.—*Emigrant's Hand-Book.*

Ashes for Corn.

An Eastern correspondent writes as follows:

"I have succeeded in raising full forty bushels of corn from an acre by the application of unleached ashes, on land that old farmers said would not produce corn. I left a few rows in the middle of the field, without ashing, which could be distinguished as far as you could see the field.—These rows had a sickly, yellow appearance, while the rest of the field was fresh and green.

I used about nine bushels of ashes to the acre, and I have no doubt that every bushel of ashes produced a bushel of corn, which is worth fifty cents. You don't catch me selling ashes for a shilling a bushel after this."

Remarks.—The soil on which the above experiment was made, was a heavy clay. As corn is a large consumer of potash, it is obvious that ashes are a highly appropriate manure, and on soils in which that alkali is wanting, the application of it must produce striking effects.

From Colman's European Agriculture.

Wheat Culture in England--Large Crops--Mode of Cultivation, &c.

'Wheat is to be considered as the standard grain, and the great crop of England, upon which the arable farmer mainly depends for his money returns from his farm, and for the payment of his labor and rent, and to which, therefore, his attention is constantly and principally directed.

'Of the average yield of wheat per acre throughout the kingdom, it is difficult to speak with any confidence, as no exact returns are collected, and conclusions of this sort must be almost wholly conjectural. Nor do I see what useful lesson is to be learned from combining the results of poor and negligent with those of the most liberal and skillful cultivation, and striking a general average between them, except to afford an excuse or palliative for the neglect and indolence of those who do not cultivate their land as they might. What we require to know is, what can be done: and this is determined beyond all question when we learn what has been done. No good cultivator should willingly stop short of what has been done by others, nor should even this satisfy him, if there is a possibility of going beyond it.

'In statistical works, 26 bushels are put down as the average yield of wheat through the kingdom: a few years since, 18 bushels were named as the customary yield. This would argue a very great improvement. Under good cultivation, I have scarcely ever found the yield less than 32 bushels. I have very frequently found it full 40 bushels. In the fens of Lincolnshire, on the redeemed land, I am informed, on the best authority, that the yield is very often from 7 to 8 quarters, that is, from 56 to 64 bushels per acre.—A much higher amount than this has been named. One of the best farmers in the kingdom, in the county of Berks, assured me that the crop on his large farm, in 1844–5, averaged 56 bushels to the acre; and it is well attested that a crop grown in Norfolk county, in the same year, produced 11 quarters 2 bushels 3 pecks per acre, that is to say, 90 bushels 3 pecks per acre; the largest crop on record, within my knowledge.

'I have a great many returns of 32 bushels, and 40 bushels produced on an acre; and I am strongly inclined to believe that the average of good cultivation, in ordinary seasons, is seldom less than 32 bushels per acre. The product of good cultivation should be considered, therefore, as the standard crop, without reducing it by the much smaller crops of those who either cultivate negligently, or manure sparingly, or suffer their crops to be stifled with weeds.

'In an experiment made by W. Miles, Esq. M. P., the produce, per acre, of sound wheat was 48 bushels; 42 bushels 2 pecks; 47 bushels; 35 bushels 8 pecks; 49 bushels.

'The crops on a farm of P. Pusey, Esq., were, on one acre, at the rate of 37 3-4 bushels; on another, 45½ bushels; on another, 47½ bushels. "This, it will be remarked, was not a garden experiment, but applies to a whole field of wheat, and the amount was given by the occupier of the land."

'W. L. Kidd, M. D. of Armagh, Ireland, informed me that he obtained at the rate of 50 bushels of 62 lbs., or about 28 cwt. per acre, and that there were persons in the neighborhood whose crops were still larger. The wheat was red wheat; the quality such as to command the highest price.

'Mr. Theadstow, of Booth, near Liverpool, informs me, that in 1844–5, on a piece of land less than a statute acre, he produced 64 bushels of wheat, of 70 pounds the bushel. I will subjoin his statement in this case. "The soil is very light, consisting of a great portion of sand, and lying close to the sea shore. The land, the previous year, had been trenched to the depth of about three feet, by hand labor, and well manured with horse and cow manure, and planted with potatoes. When the wheat was sown, the ordinary mode of cultivation was pursued. Something short of 2 bushels of white Dantzic wheat was sown. The seed had been produced on land of a heavier nature than that on which it was sown here.—The mode of sowing was broadcast; the time of sowing the first of December. This is a mode of cultivation adopted generally on my farm—universally with vegetables—and produces uncommon roots. Some of the cabbages, which I have weighed, weighed 45 lbs. each." In some experiments made in Gloucestershire, the products were as follows, per acre, of good wheat:

'Brown's white prolific.	48 bu.	3 p.	62 lbs.	per bu.
" red prolific,	46 "	2 "	60½ "	"
Whittington white,	48 "	- -	59 "	"
Old Hert's white,	46 "	- -	61 "	"
Golden drop red,	49 "	- -	61½ "	"
Creeping wheat, (red,)	46 "	1 p'k;	62½ "	"

'The above were planted on a gravelly loam, (clover lay,) in a high state of cultivation.

'These are remarkable facts, and well worthy the attention of farmers.

'Wheat is sometimes grown upon a summer or naked fallow, especially where the land is much infested with weeds; but naked fallows are well nigh exploded in any improved system of English husbandry. Wheat generally comes once in a four years' rotation; sometimes once in two years, and in most cases twice in seven years; in some every alternate year, beans forming the intermediate crop. The latter course, for sixteen years, has been the practice of an eminent farmer in Norfolk, whose admirably managed farm I had the pleasure of visiting. The land subjected to this treatment is a deep rich alluvial, formed from the deposits under the sea, and the beans are most thoroughly manured.

'The preparation of the land for wheat is made with extraordinary pains. The crop preceding it is usually turnips, or some green esculent, which is consumed by sheep upon the land. The turnips are of course most amply manured, and are generally cultivated in drills. When the season for sowing wheat arrives, these drills are opened by the plough, and the decomposed manure very thoroughly distributed. It is considered bad husbandry to apply green manure, or manure of any kind, excepting from the folding of sheep upon it, to the land, the year the wheat is to be sown.

'The soil preferred for wheat is a strong soil, with a large proportion of clay; but experience has, of late years, contrary to early and strong prejudices, determined that even the light and loamy soils are capable of bearing heavy crops of wheat, provided they can be sufficiently consolidated. This is done often by driving sheep over the land after sowing, and by an instrument which I shall presently describe, called a *presser*.

'The first process is, to thoroughly to clean the land from weeds and rubbish; but the green crop previously cultivated, if it has been properly managed, will have done much towards this.

'But wheat is often sown after clover, or upon what is called a clover lay; the first crop in the course being turnips, the second barley, the third clover; if cut the first year for hay, then depastured with sheep the second; or otherwise fed and plowed in, and the wheat sown on the inverted sward, and the land not harrowed so deeply as to tear it to pieces. When the clover is designed to stand only one year, it is mowed and made into hay in June, and then sheep are folded upon it;—and in this way they go over the field twice before it is plowed for sowing. It is deemed of great importance, in this case, that the soil should be in as compact a state as possible, and a heavy roller is passed over it. The greatest stress is laid upon this matter of consolidating the soil, where it is of a light or spongy character; and in some soils the ground is simply harrowed, where the preceding crop allows of such a process, or otherwise plowed not more than three or four inches in depth.

'The quantity of seed to be sown has been matter of much discussion and experiment.—The amount, with different farmers, varies from three pecks to three bushels per acre; and some persons contend for four and even five bushels. Among the various conflicting statements which have been made to me on this subject, and which have been publicly reported, it is exceedingly difficult to arrive at any satisfactory conclusion. A very eminent Scotch farmer, of large experience, says that, "in some seasons, a moderately thin plant—that is to say, a small number of the young plants of wheat standing upon a given space of ground—is found to be advantageous, both

to quality and quantity of grain, and in others highly injurious."

'Mr. Davis, of Crogden, to whom I have before referred, claims, from a sowing of three pecks to the acre, to produce an average crop of 40 bushels to the acre.

'In an experiment which I myself saw on a very small scale, wheat, dibbled at the rate of six quarts to the acre, produced at the rate of 70 bushels to the acre.

'In this matter, many things are to be considered. Some kinds of wheat tillers much more than others; that is, a single plant of one kind of wheat will throw out more shoots than a plant of another kind. The time of sowing is a material point. The earlier sown wheat has much more time to thicken, and throw out bearing shoots, than late sown wheat. The condition of the land, likewise, is to be considered. Highly enriched and manured land will nourish more plants than that which is poor and scantily manured. The state of the land, in the next place, as it respects weeds, must be taken into view. On land which is foul, thin sowing will give an opportunity for the weeds to spread themselves, very much to the disadvantage of the crop.

'I have already treated this subject to some extent, in my second report, to which I must refer my readers. I cannot help thinking that, with early sowing upon well manured and well cleaned land, and the faithful hoeing of the crop, so as to keep it free from weeds, a much less quantity of seed than what is usually applied, might be safely and strongly recommended. But, as these favorable circumstances can not always be secured, certainly, in ordinary cases, a liberal allowance of seed is to be advised. The only saving to be calculated upon, in this matter, is in the quantity of the seed; as it does not appear, from any experiments which have been reported, or which have come under my notice, that the crop has, in any case, been lessened by too much seed.

'It is admitted that crops standing thickly ripen soonest; and the grain produced by them is said to be of a superior quality to that which comes from thinly sowed crops.

'On Lord Leicester's estate, in Norfolk, who, more than any other man in the annals of English agriculture, distinguished himself for his successful husbandry,) the practice was to sow three bushels per acre. On Mr. Dixon's farm, in Kent, whose crops are said to average forty-two bushels per acre, the custom is to sow two and a half, and sometimes nearly three bushels per acre.

'The time of sowing wheat in England admits of a long range, from the middle of September until December, and sometimes even into February. Where circumstances favor it, an early sowing is preferred; and very forward wheats are fed down, in the spring, by sheep, which are folded upon them. In cases where a crop, to be followed by wheat, is to be used upon the ground, the wheat is not sowed until the crop is fed off; or where wheat follows potatoes, the sowing is carried forward far into the season.

'Wheat follows turnips, mangel-wurtzel, carrots, potatoes, and clover. The last is universally approved.

'There are three modes of sowing wheat; the first, broadcast; the second, by drilling; the third, by dibbling. The last two modes are generally done by machines; the last not always, however; unless women and children, who drop the grains in the hole made by a dibble of the most simple construction, are to be considered as machines, and the human hand the most perfect of its parts. Drilling and dibbling are methods certainly to be preferred, as the seed is more evenly sown, and an opportunity is offered of hoeing and weeding the crop, which is here most carefully done, and undoubtedly to great advantage.—When wheat is drilled, likewise, there is an opportunity of cultivating between the rows by implements for that purpose, the advantages of which are unquestionable. These instruments are denominated *horse shoes* or *scufflers*.

On the Use and Properties of wood Ashes.

According to the analyses of Dr. Sprengel, 100 parts of the Ash of Oak contain:

Silica,	28,95
Oxide of Iron, Alumina, and Maganese,	8,14
Lime,	16,38
Magnesia,	1,44
Potash,	16,20
Soda,	6,73
Sulphuric acid,	3,36
Phosphoric acid,	1,92
Chlorine,	2,41
Carbonic acid,	14,47
	100,00

On examining the above table the reader will find that oak, and the same is true of other hard wood, contains all the minerals found in any plant grown in this latiude. By way of comparison, we give the constituents of the ash of wheat, both straw and seed, according to the analyses of Boussingault;

	Straw.	Wheat.
Silica,	67.6	1.3
Lime,	8.5	2.9
Potash,	9.2	29.5
Magnesia,	5.	15.9
Chlorine,	.6	traces.
Soda,	.3	traces.
Phosphoric acid,	3.1	47.
Sulphuric acid,	1.	1.
Carbonic acid,	0.	0.
Iron and Manganese,	1.	1.4
Charcoal and loss,	3.7	1.

It is particularly worthy of note that, while 100 lbs of oak ash contain a fraction less than 2 lbs. of phosphoric acid, a like weight of the ash of wheat has 47 lbs of this valuable acid. Conceding that 100 lbs of ordinary hard wood ashes will yield 2 lbs of phosphoric acid, how many pounds of dry ashes must be applied to an acre, to give a crop of wheat, both straw and grain, equal to 30 bushels, and supply it with all the phosphorus it needs? Mark well the solution of this problem.

Thirty bushels of wheat at 60 lbs per bushel will weigh 1800 lbs. In 100 lbs of this there are usually 2¼ lbs of ash having, as above stated, 47 per cent of phosphoric acid in its composition. At this rate, 1800 lbs of wheat will contain 40½ lbs of ash, in which there will be 18 lbs and a small fraction of the acid above named. To 1 lb. of wheat there is usually 2½ lbs of straw. (The relative proportion of wheat and straw varies exceedingly, as every wheat grower knows. Nor is the quantity of ash left in the wheat straw when burned always the same. It varies from 3 to 16 per cent. of the weight of dry straw. The average is not far from 7 per cent.) To produce 30 bushels of wheat one must have on an average 4,500 lbs of straw, containing 315 lbs of incombustible minerals, which if the straw is burned will be left in the form of ash. As 3.1 per cent. of this ash is phosphoric acid, 315 lbs will contain 9.76 lbs. From these figures it is seen that the ash of wheat and straw together contain 27.76 lbs of phosphoric acid. To furnish this amount by applying wood ashes that have only 2 lbs in 100, the husbandman must spread 1400 lbs—about 20 bushels of ashes on the acre. It is particularly worthy of note that, 4,500 lbs of wheat straw contain only one half as much phosphoric acid as 1800 lbs of wheat. As a matter of economy, instead of applying 1400 lbs of ashes to an acre, where we wish to harvest 30 bushels of wheat, 100 pounds of bones con be boiled to a coarse powder in a strong lye, and mixed with ten bushels of ashes to be used for the same purpose. This is a most valuable compound to aid in forming the seeds of all cultivated plants.

When a wheat field is covered with a light snow, so that a team may go over it without injury, ashes may be evenly spread from a sled box, at any rate per acre which their cost, and the circumstances of the case may require.—To all spring crops they may be applied broadcast, or in the hill at the time of seeding.—Care is necessary to mix caustic ashes with the earth, to prevent injury to the young and tender plants, when they first start. By carelessness in this regard, we have injured them.

We are greatly in favor of a compound made by the union of ten bushels of ashes, five of gypsum, and three of common salt, to which we would add ten of lime, did not our soil abound in that mineral. This compound has all the purely earthy elements that exist in all crops. It may be regarded as an universal fertilizer, applicable to all soils. Its quality, however, will be much improved, by adding to it one or two hundred lbs of bones boiled to powder in strong lye.

We met several farmers at the State Fair recently held at Auburn, who have used the above compound on our recommendation, and they expressed the highest satisfaction at the result. If used broad-cast, there is no danger of putting on too much—for ten bushels of ashes, ten of lime, five of gypsum, and three of salt, may be spread on an acre, if not a fourth of it, without injury, except waste of material. Our motto for feeding plants is: "Give them just what they need, and that, *little and often.*

We have satisfied ourselves that it is bad economy to apply to any farm soil a large amount of manure of any kind at once. In all cases a great waste of soluble ingredients is unavoidable. Dissolve common salt or other mineral in water, pour it on the ground, and wherever the water runs, the dissolved salt goes with it. The more soluble the fertilizer, the more sparingly should it be applied at any one time, and the oftener the application should be renewed. *Water* itself is a powerful fertilizer as every body knows. How great the advantage of having this important element in all plants frequently applied in gentle showers—in moderate doses! Be wise and add to the dews and rains of heaven, such other elements as Nature uses in forming all your crops—carefully saving all these elements by strict economy, and using them to the very best advantage. If lime and gypsum are high in price at your residence, add only five of lime and two and a half of gypsum to ten bushels of ashes when you apply the latter to your wheat, corn, or potato crop.

To have good Vinegar.

The cowherds on the Alps and in several parts of France use milk whey to make the sharpest vinegar, and they also extract from it a salt called in pharmacy sugar of milk, which the Swiss doctors consider as the best detergent to purify the blood and cure radically the most inveterate cutaneous complaints. The method they use to prepare this salt is this: after having separated all the caseous and oily parts, the whey is clarified and boiled until reduced to one-fourth part of the whole, which they deposit in wooden or earthen pans in a cool place. In a short time the saccharine particles are crystallized, the phlegmatic part is then decanted slowly and

the sugar is dried upon pieces of grey paper. This operation may be accelerated by boiling out the whey entirely, but the sugar which remains at the bottom of the kettle is colored and unfit for pharmaceutical purposes: it might, however, answer well for veterinary uses.

The process for making vinegar out of milk is very simple. After having clarified the whey, it is poured into casks with some aromatic plants or elder blossoms, as it suits the fancy, and exposed in open air to the sun, where it soon acquires an uncommon degree of acidity.

The Russians and Tartars make with the whey of their mares' milk a strong and intoxicating liquor, which they call Koumis, and also vinegar, by suffering that substance to pass from the vinous to the acetous fermentation.—*Transactions of the Society of Arts, N. Y.*

Recruiting a Soil by its own Vegetation.

[We have not lately met with a more satisfactory demonstration of the power of nature to restore fertility to a worn out soil, by the product of its own vegetable growth, than is contained in the following account of an experiment made by a North Carolina farmer, as given in a late number of the Cultivator. As an example of agricultural skill, it is valueless—for no Northern farmer would think of setting about improving his lands by so bungling a method. But it strikes us as proof precisely in point, of the advantage, to a soil lacking in fertility, of plowing under the entire product of its vegetation.]

"About eight years ago, I began to practice the enclosing system on an old field containing some 50 acres of barren sand, nothing else appearing in the composition of the soil. I should say that five bushels of corn to the acre would be the maximum under the best cultivation. I ordered stock to be rigidly kept off. It clothed itself the first year in a few sickly weeds. I then cultivated it in corn, and after husking on the land, cut down the stalks and shucks and chopped them in three pieces, giving it twelve months rest; result, a manifest improvement in the growth of weeds.—I again cultivated in corn—the crop much better, but still producing not more than seven or eight bushels per acre. I then followed the same plan of cutting down and resting. The growth of weeds increased very perceptibly; towards the last of winter I plowed in the weeds, and in the spring planted in corn, the crop yielding ten bushels per acre; again cut down the stalks, &c., which were succeeded by a dense growth of weeds; plowed them in as heretofore, and planted one half in Baden corn, the other half our common corn. Produce, Baden corn, 24 bushels per acre; common do., 12 bushels per acre.—Again cut down the stalks, which afforded an unusual parcel of litter to spread over the land; and while I am now writing, I never saw a more luxuriant growth of rich weeds. I intend planting again in corn the ensuing spring, and may reasonably calculate on an increase of one-fourth of the crop."

Soot as a Manure.

The great value of soot as a manure may be very readily conceived from the following analysis, by which it will be seen that it comprises alike the elements of nutritive and mineral manures.

Geine,	30.70
Extractive matter and nitrogen,	20.
Carbonate of lime and traces of magnesia,	14.66
Acetate of Lime,	5.65
Sulphate of Lime,	5.
Phosphate of Lime and Iron,	1.50
Acetate of Potash,	4.10
Muriate of Potash,	.36
Acetate of Ammonia,	.20
Acetate of Magnesia,	.53
Silex,	.95
Carbon,	3.85
Water,	12.50
—*Ex. paper.*	100.

Progress of the Wool Manufacturers.—Samuel Lawrence, Esq., the celebrated manufacturer at Lowell, in a letter dated 9th August, 1846, to Thomas Miller, a wool grower in Pennsylvania, says:

"We now use about a million pounds of fine wool, and are starting another mill, which will require about seven hundred thousand pounds yearly in addition. We are laying the foundation of another establishment, nine miles from here, which will require about two millions of pounds more per annum."

In addition to the above, Mr. Lawrence says, too, that he has no cause to "discharge a single hand, nor reduce the wages of one a single cent."

The degree of Lime essential to the growth of Wheat.—"I find by chemical examination of several remarkable soils, that a very minute quantity of carbonate of Lime, viz: from 1 to 2 per cent. is amply sufficient to render them capable of bearing heavy crops of good wheat. I am also satified that a soil is incapable of producing wheat of good quality if it does not contain carbonate of lime; for the substance is an essential ingredient of the grain."—Chal. T. Jackson.

TO IMPROVE THE FLAVOR OF MOLASSES.—The use of molasses, or treacle, in the United States, is very great, and it can be had at almost every country store. Some people dislike the peculiar flavor of molasses, and the following is a mode by which it may be much improved. It will then answer for sweetening tea and coffee, or for preserves, cake, and the like.

Take such quantity of molasses as may be desired; add to it an equal *weight* of soft, pure water; boil these, with about one-eighth part of powdered charcoal, for half an hour. Strain the whole, and let it evaporate slowly, till it is of the usual thickness of molasses.

This is well worth trying by those who desire a good and cheap article of sweetening.—*Emigrant's Hand Book.*

WATER PROOF RECIPE.—Either for boots or other leather: One pint Tanners' oil, half pound tallow, a lump of rosin size of a shellbark, Burgundy pitch size of an egg, beeswax size of an egg, lampblack three cents worth, all mixed together, and gradually melted over a slow fire.—When to be applied, the mixture should be made about milk warm, and put on with a sponge.—The leather to be made a little damp, but not wet.—*Farmer's Cabinet.*

LIME ON ORCHARDS.—The operation of lime on orchards is said to be highly beneficial. It tends, not only greatly to promote their health and advance their growth, but it also improves the *quality of the fruit.* An orchard, which had been in bearing nearly thirty years, suddenly failed, and was renovated in one season simply by applying lime,—the quantity being one bushel per tree. It was sown broadcast.—*Mc. Farmer.*

DISEASED TURNIPS.—It is announced that the turnips in England and Ireland are infected with disease similar to that of potatoes: and as this vegetable is raised in large quantities, and much depended on for food, its failure is regarded as a serious calamity.—*Scientific American.*

THIRD GROWTH OF PEARS.—Mr. William Rhood, of New Haven, has a tree that has produced the third growth of pears this season; the first crop was ripe on the first of August: the second on the 2d of October, and the third is now ripening.—*Scientific Amer.*

Prince's Linnæan Botanic Garden & Nurseries, Flushing, near N. York.

THE Great original Establishment, WM. R. PRINCE & CO., have published their unrivalled Descriptive Catalogues of Fruit and Ornamental Trees and Plants, comprising the largest assortment of the various classes, and the greatest collection of new and rare varieties ever yet offered to the public, and at greatly reduced prices. Every variety of Trees and Plants, is individually described with a precision never before evinced in any European or American Catalogue, and the gross blunders of other Catalogues are also set aright. The collection of Roses comprise 1600 splendid varieties. These superior Catalogues will be sent gratis to every post-paid applicant who desires to make purchases.

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THE subscribers, under the name of Hurlbut & Treadwell, have established an Agency at Jackson Michigan, for the purpose of transacting business as General Land Agents, and will personally attend

To the purchase and sale of Real Estate of all descriptions, to the payment of Taxes, redemption of lands sold for Taxes, Examination of titles, Conveyancing,

and such other business as pertains to a general real estate Agency.

Persons having farms or lands to dispose of in any part of the State, especially in Jackson or adjoining counties, will find it for their interest to furnish us with a particular description of the same, and the terms of purchase, as arrangements have been made with Eastern Agencies through which owners desirous of disposing of such property may be materially benefitted.

Purchasers also are invited to favor our agency. No charge will in such cases be made, except where a sale is effected, when a commission of 2 per cent. is expected; and our charges shall in all instances be satisfactory.

A Catalogue of lands for sale will be published and extensively circulated by our office, and owners of Farms and other real property desiring to find purchasers, can for a reasonable consideration, avail themselves of this medium, by forwarding to us an accurate description of the property, its value, location, soil, improvements, &c., with the price and terms on which a purchase may be made, and the sum of one dollar for advertising each description. All letters must be post paid.

H. HURLBUT,
J. M. TREADWELL.

Jackson, September 1st, 1846.

☞ Two or three improved farms are now wanted in the vicinity of Jackson.

VALUABLE TO FARMERS.

THE subscriber would hereby say to the good people of Michigan, that he is prepared to furnish (on short notice,) those who wish, with a patent machine for the purpose of smoothing, cutting and leveling, or turfing entirely, swamps and marshes.

The subscriber is also prepared to sell town and county rights on liberal terms. This machine works to the entire satisfaction of all who have seen its operation. Two yoke of oxen are sufficient to prepare as many acres of marsh for the cultivated grasses, as they will harrow once over in the same time.

Farmers owning marshes are requested to call at the residence of the subscriber in the rear of the Baptist Meeting house and examine the machine for themselves E. L. FREEMAN.

Jackson, Michigan, August 28, 1846.

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MICHIGAN FARMER.

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During the ensuing year, all subscriptions will commence with the volume. The price of a single copy is fifty cents. To clubs, a reduction is made, namely, five copies for $2, eight copies for $3; and in this proportion for any larger number. No reduction allowed unless payment be made in advance.

To all demands remaining unpaid on the 1st of January next, an addition of 25 per cent. will be made.

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